

2012

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Recommended Citation

Rains, Jamie E. (2012) "The journey of imagery in relation to post traumatic stress (PTSD) treatment: a literature review," *Modern Psychological Studies*: Vol. 18 : No. 1 , Article 9.
Available at: <https://scholar.utc.edu/mps/vol18/iss1/9>

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The Journey of Imagery in Relation to Post Traumatic Stress (PTSD) Treatment

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Abstract

This purpose of this paper is to review the literature on imagery as it relates to the treatment of nightmares as a symptom of post-traumatic stress disorder (PTSD). This paper introduces the dire need for nightmare related PTSD treatments. Furthermore, it describes why imagery exposure works, why it should be used to treat PTSD related nightmares, and this paper will introduce proposed further research that has been influenced by the literature reviewed.

Keywords: Post Traumatic Stress Disorder, Nightmares, Treatment, REM Sleep

A Literature Review

More than 2 million men and women have deployed and 793,000 of those have deployed more than once (Tan, 2009). It is expected that 11-20% of those will develop post-traumatic stress disorder, also referred to as PTSD (How Common is PTSD, 2007). One of the hallmark symptoms of PTSD is nightmares (DSM Criteria for PTSD, 2007). The purpose of this paper is to identify the progression that research has made with imagery therapy in relation to nightmares, how imagery therapy is being used to target PTSD related nightmares, and the effectiveness of such treatments.

There is much debate among scientists as to how nightmares should be treated in relation to PTSD. Some believe that nightmares should be treated as a symptom of PTSD. For example, treat the nightmare and PTSD symptomology improves. Others believe that nightmares arise from PTSD, but because of their severity, morph into a separate disorder. As a result, PTSD treatment and nightmare treatment should not necessarily overlap. The researchers who fall in the latter category believe that improvement of one will not necessarily result in improvement of the other. The debate as to whether nightmares should be addressed as a symptom of PTSD or as a separate disorder is far beyond the scope of this literature review. For that reason, this literature review will strictly focus on how nightmares are treated as a symptom of PTSD.

What is Imaginal Exposure and why use is for PTSD Related Nightmares?

Imaginal Exposure as defined by Rothbaum and Mellman (2001) is often referred to as "flooding, the confrontation with frightening, but safe stimuli until anxiety dissolves". According to Rothbaum and Mellman (2001) research on the emotional processing theory by Foa and Kozak (1986) suggests that there are two conditions that must be met for fear reduction. First, the fear network must be activated.

Second, new information must be introduced so that maladaptive thinking can be corrected (Foa and Kozak, 1986). Foa and Kozak's (1986) research provides support for the effectiveness of imaginal exposure. Imaginal exposure allows PTSD sufferers the opportunity to examine their trauma related memories in a safe environment, and to fully evaluate their experiences and maladaptive thoughts. It can also stop negative reinforcement that accompanies avoidance. (Rothbaum and Mellman, 2001). However, it has been suggested that in order for imaginal exposure to work, it needs to be with prolonged exposure. (Rothbaum and Mellman, 2001). What constitutes as prolonged exposure will be examined a bit later.

PTSD Has Many Symptoms. Why should we focus on Nightmares?

Nightmares are a hallmark sign of PTSD. In fact, there is evidence suggesting a relationship between specific nightmares depicting the traumatic incident or relating to it. For example, in a study conducted by Rothbaum and Mellman (2001), they found that among two participants who actually recovered from PTSD, dream content was no longer rated as being related to or in connection to the traumatic event experience. In the same study, two participants where PTSD remained continued to report dreams depicting or relating to their traumatic event. This suggests that PTSD can be approached through the treatment of nightmares.

It has been suggested that REM sleep plays an adaptive function role and coincidently, research shows that REM sleep experiences more disruption than any other sleep phases in PTSD sufferers (Rothbaum and Mellman, 2001). These results should encourage researchers to further investigate the relationship between dreams, REM stages, non REM stages, and PTSD symptomology. Prior to the investigation of research on PTSD related nightmares, it is helpful to look at the emotional

processing theory developed by Foa and Kozak (1986). This will shed some light on how fear is processed and why exposure therapy is a viable option.

Emotional Processing of Fear: Exposure to Corrective Information

Fear is routed in memory networks, but exposure therapy to feared stimuli can modify these connections (Foa and Kozak, 1986). Foa and Kozak (1986) describe two conditions that must be met in order for adjustments to be made to the existing memory network. First, the fear network must be activated. Second, corrected information about the feared stimulus must be integrated. The idea in that restructuring or correcting the memory networks associated with fear through exposure will reduce anxiety. Research shows that individuals have the power to change their maladaptive ways of thinking. But, are there predispositions that make some individuals more susceptible to falling victim to nightmares?

Belicki and Belicki (1986) examined the relationship of nightmare frequency, hypnotic ability, vividness of visual imagery, and the tendency to become absorbed in fantasy like experience. The study consisted of 841 undergraduate university students who participated in group tests of hypnotic ability. After, the participants estimated the number of nightmares that they had experienced the prior year. While most research on nightmares focus on psychopathology, Belicki and Belicki (1986) attempted to identify empirical support for a relationship between nightmare and cognitive styles. They found that individuals with frequent nightmares scored higher on hypnotizability, vividness of imagery, and absorption, and that nightmare frequency was related positively to all variables. A relationship has been established between vividness of imagery and nightmares. But, what is the relationship between different diagnosis of anxiety and imagery?

Cook, Melamed, Cuthbert, McNeil, and Lang (1988) examined anxiety disorders in relation to imagery. Thirty-eight anxiety patients (11 agoraphobics with panic attacks, 14 social phobics, and 12 simple phobics). Patients were diagnosed according to the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980) by two clinical psychologists. Tape recorded scripts based on phobic memories as well as other personal and standardized control scripts were used to initiate imagery. Cook et al. (1988) found that phobic imagery produced significantly larger heart rate and

skin conductances than control imagery. Autonomic reactivity to phobic scenes was significantly related to questionnaire measures of imagery ability and psychopathology for simple phobics and social phobics, but not for agoraphobics. Overall, personal scripts promoted greater response, affective intensity, and vividness compared to standard scripts. From the emotional processing theory, this makes sense. The personal scripts have been routed in the fear memory network. Good imagers in social and specific phobics reported high arousal and felt more fearful. However, this was not the case in individuals with agoraphobia. According to Cook et al. (1988) these results indicate important differences between anxiety diagnoses and how they are organized in what Foa & Kozak (1986) refer to as the fear network. Cook et al. (1988) also concluded that visceral reactivity is not determined by imagery ability, but by specific phobia. Cook, et al. (1988) identified a serious disconnect with between the physiology and affective reports in those with agoraphobia. For example, agoraphobics had the lowest physiological responses despite reporting greater physiological and emotional distress compared to specific and social phobics. Belicki and Belicki's (1986) study showed that image vividness is related to the frequency of nightmares. But, is image vividness a psychophysiology regulator?

Laor, Wolmer, Wiener, Sharon, Weizman, Toren, and Ron (1999) examined the relationship between image vividness and psychophysiological responses to trauma related stimuli in participants with PTSD. An auditory stimulus related to a shared trauma was presented to participants with and without PTSD and physiological measurements were taken (heart rate and blood pressure). The participants all came from a low-income neighborhood in Tel Aviv, Israel, which was a war zone area. All of the participants were interviewed by experienced psychiatrists 12-18 months after the end of war. The study consisted of 22 participants (9 men, and 13 women) who were diagnosed with PTSD. The control group consisted of 23 (9 men, and 14 women) in whom PTSD was ruled out. Socioeconomic status and education was matched for the groups.

A negative correlation was noted in the PTSD group between image vividness and the level of physiological response. This is very interesting because these results go along with the findings by Cook et al. (1988) when they noted that there was a serious disconnect between participants with agoraphobia reporting high affective responses but having low physiological responses. This shouldn't come as too much of a surprise given that panic disorders commonly occur with PTSD (Cougle, Feldner, Keough, Hawkins, and Fitch, 2010) and

agoraphobia is a common component of panic disorders (PubMed Health, 2012). This could suggest that PTSD and agoraphobia may respond to similar treatments or at the very least be able to be approached in the same manner. At the same time, the study by Laor et. al (1999) found higher than normal levels of psychophysiological activity in participants with PTSD, but only on exposure to trauma related stimuli. Overall, no significant baseline differences between those with and without PTSD were found. The question remains, can Imaginal exposure help people?

Research shows that exposure therapy is effective (Foa & Kozak, 1986). But, what about imaginal exposure (IE) as form of exposure therapy? Tarrier, Pilgrim, Sommerfield, Faragher, Reynolds, Graham, and Barrowclough (1999) performed a randomized trial in which imaginal exposure (IE) and cognitive therapy (CT) were compared in the treatment of chronic posttraumatic stress disorder (PTSD). 72 patients entered treatment. Patients were diagnosed as having PTSD as outlined in the Diagnostic and Statistical Manual of Mental Disorder, Third Edition Revised (DSM-III-R; American Psychiatric Association, 1987). The study required that PTSD must have been present for no less than 6 months and no more than 10 years. If psychotropic drugs were being used, the medication regime had to have been stable for at least three months prior to the study. However, once in the study, any changes to psychotropic drugs and their direct effects were not accounted for. 45% of the patients were receiving psychotropic drugs at the beginning of treatment. 58% of the patients were male. There were no significant differences between the treatment groups, except that a significant number of patients receiving CT had a previous psychiatric disorder. Overall, there were significant improvements in all measures over treatment and at the follow up, but there were no significant differences between the two treatments. It was established that both IE and CT can produce the reduction of PTSD symptoms. However, neither treatment was able to successfully remove all symptomology related to PTSD. According to Tarrier et al. (1999) it is important to note that a significant number of patients who showed worsening over treatment received IE, although no effect was found at follow up. Tarrier et al. (1999) also reported that patients who worsened in general showed a greater tendency to miss treatment sessions, rated therapy as less credible, and were rated as less motivated by the therapist. Research shows that potential does exist for imaginal exposure. But, can positive results be produced in soldiers with PTSD related nightmares?

Forbes, Phelps, and McHugh (2001) conducted a pilot study that examined the use of Imagery Rehearsal (IR) in treating combat-related nightmares in 12 Vietnam Veterans with PTSD. All participants were male, and the mean age was 48. The participants were determined to have PTSD as outlined by the criteria in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994). The study comprised of three treatment groups, 4 soldiers each across 6 sessions. Participants were required to target repetitive combat-related nightmares through imagery rehearsal on a weekly basis. Treatment effects were investigated using nightmare diaries and established instruments, such as the Impact of Event Scale-Revised (IES-R) and The Symptom Checklist-90-R (SCL-90-R). Self-report nightmare diaries were used to record daily the frequency and intensity of nightmares, to estimate the quality of sleep, and the use of medications, stimulants, and alcohol. It should also be noted that the only record for the use of psychotropic in patients came from self-report nightmare diaries

Overall, Forbes et al. (2001) found significant reductions in nightmares targeted and improvements in PTSD and comorbid symptomology. Overall, 11 of the 12 participants reported improvement in frequency and/or intensity of nightmares. This study shows promising results in treating PTSD related nightmares in those with military trauma. However, there remains concern among scientists. Will imaginal exposure exacerbate PTSD symptoms?

Foa, Zoellner, Feeny, Hembree, and Alvarez-Conrad (2002) examined symptom exacerbation in 76 women with chronic PTSD. They attempt to find an association between imagery exposure and depressive symptoms. Furthermore, they wanted to find out if those who do show symptom exacerbation benefit from treatment and how does that relate to treatment dropout. Foa et al.(2002) operationally defined significant symptom exacerbation as "deterioration beyond error variability" and it was carefully measured. All participants were female victims of sexual and non-sexual assault with PTSD. Participants were required to have had PTSD for a minimum of 3 months and were diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994). 67.6% had a total income of \$30,000 or less a year. Participants were randomly placed in an active treatment program. 63% of women were single, 23.2% married or cohabiting, and 13.7 separated or divorced.

Evaluations were conducted before and after treatment. Treatment was between 9-12 sessions. For those who obtained at least a 70% reduction in PTSD symptoms by session 9, treatment was stopped. For the others, treatment went until 12 sessions. Also, biweekly self-report measures were taken during treatment to examine changes in depression, anxiety, and symptom exacerbation. Treatment sessions were randomly assigned, and participants were either assigned to prolonged imaginal exposure and vivo exposure alone (53.9%) or to prolonged imaginal and vivo exposure combined with cognitive restricting (46.1). Overall, 10.5% reported an increase in PTSD symptoms 21.1% in anxiety, and 9.2% in depression after the initiation of PE. More people who reported symptom exacerbation were in the PE than in the PE/CR. It was concluded that symptom exacerbation does seem to be related to the initial exposure to PE and but that it is only temporary. What is important is that those who did report symptom exacerbation did not benefit less from the treatment than those who did not report exacerbation. Furthermore, symptom exacerbation was not related to treatment dropout. Overall, a minority of participants exhibited reliable symptom exacerbation. Research shows that imaginal therapy may be a viable option. But, what is the most effective and cost efficient way to implement this treatment?

Minnen and Foa (2006) examined the effects of prolonged imaginal exposure sessions (60 minutes) in comparison with shorter exposure sessions (30 minutes) for patients with chronic PTSD. The participants all female had met PTSD criteria as outlined in the Diagnostic and Statistical Manual of Mental Disorder, Third Edition Revised (DSM-III-R; American Psychiatric Association, 1987) or the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994). As the authors correctly hypothesized, participants in the 30 minutes exposure sessions showed less within sessions habituation compared to those who received 60 minutes sessions. However, there were no differences between patients who received 30 minute and 60 minutes exposure sessions in regards to improvements in PTSD symptoms, state anxiety, depression, and end-state functioning. This was found true at both post treatment and at a 1 month follow up. The overall end result, 30 min exposure sessions are effective as the 60 min sessions. This offers hope in that shorter and less demanding treatments may be an effective route. What is interesting is that in session habituation did not necessarily predict whether PTSD symptomology would decrease. Instead, Minnen and Foa (2006)

found a relationship with in between session habituation and PTSD symptomology. Imaginal exposure seems to offer promising results to rape victims.

Current Research on Imagery Rehearsal Therapy for Post traumatic Nightmares: 2009-Present

Lu, Wagner, Van Male, Whitehead, and Boehnlein (2009) examined 15 male U.S. veterans with PTSD and trauma related nightmares, who had no previously completed trauma-focused PTSD treatment in a small uncontrolled study. All PTSD cases were related to military trauma. Participants attend 6 IRT group (3-5 veterans) 90 min sessions. No benefits were observed immediately post treatment. However, at 3-6 month follow ups, trauma related nightmare frequency (night/week) decreased. 88% were white and all were male. 53% were taking sleep medications. At the 6 month follow up, 13% reported absence of the target nightmare for at least 1 month 40% reported change in target nightmare content. 66% reported reduced trauma-related nightmare frequency, and 13% had no change, and 20% reported a mild increase. The authors attribute the relayed improvements to the participants having difficulty creating new content for their nightmares. The focus of this study was to treat IRT as a potential stand-alone treatment for trauma related nightmares and PTSD. It was required that participants who were taking medications, have a stable regime for at least six weeks. Objective measurements were used to assess the overall severity of nightmares and impact and content of nightmares. It was reported that trauma-related nightmare decreased. However, no effects were found on measures of the impact of other nightmares, sleep quality or depression.

Cook, Harb, Gehrman, Cary, Gamble, Forbes, and Ross (2010) examined one hundred twenty-four male Vietnam War veterans with chronic, severe PTSD. Participants were randomly assigned to imagery rehearsal (n=61) or a credible active comparison condition (n=63) for the treatment of combat-related nightmares. The participants underwent 90 minutes sessions for 6 weeks. The patient's average age was 59.4 and most were African American 54% or Caucasian 42%. All were male. 78% were receiving concurrent psychotherapy and 93% were receiving treatment from a psychiatrist. Participants were required to meet the PTSD criteria as listed in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994). The goal of this randomized controlled trial was to test the efficacy of imagery rehearsal group therapy against a credible comparison form of group

therapy, sleep and nightmare management in a sample of U.S. Vietnam War veterans..with recurrent nightmares related to chronic, severe combat-related PTSD. Cook et al. (2010) concluded that veterans who received the imagery rehearsal treatment had not improved significantly more than vets in the comparison condition for nightmare frequency or PTSD symptoms. The authors suggest that this may not be because of the efficacy of the treatment, but rather the severity the severity of PTSD in combat related trauma.

Limitations

When examining all of these studies, several points should be taken into consideration. In this section, the limitations to each study will be presented in the same order in which they appeared earlier. In the study by Belicki and Belicki (1986), the authors recognized the use of caution in generalizing their findings. The 841 participants (395 men, 443 women, and 3 who provided no response to the gender question), were all university undergraduates. There is no indication that these participants did or did not have a diagnosis that included nightmares as a hallmark symptom.

In the study by Laor et al. (1999) it should be noted that this was a small case study. The extent to which the results can be generalized is unknown. Also, Laor et al. point to the fact that their sample did include individuals with a short history of PTSD (18 months). Currently, it is unknown what type of relationship, if any exists between the length of time an individual has had PTSD and treatment success.

In the study by Tarrier et al. (1999) it was required that if participants were using psychotropic drugs, they had to be on a stable medication regime for at least three months prior to entering the study. However, once in the study, any changes to psychotropic drugs and their direct effects were not accounted for. Also, 45% of the patients were receiving psychotropic drugs at the beginning of treatment.

In the study by Forbes et al. (2001), it should be noted that the length of time that participants had been diagnosed with PTSD is unknown. Also, this was a pilot study with a very small sample size. Naturally, more research is needed to support the findings in this study.

In the study by Foa et al.(2002) the authors made it known that the therapists involved with this study have had extensive experience in dealing with rape victim, and that because of that, the replication of this study by less experienced therapist may not yield the same results.

In the study Minnen and Foa (2006) we must use caution in evaluating the results. Habituation was measured by subjective distress in patients, and outcome measures relied solely on self-reports. The authors recognized this short coming and made an effort to call for future research to involve objective measurements. Just as with the research earlier by Foa et al (2002) we don't know if these results can be generalized. Nonetheless, this study opens the door for future research on between session habituation and PTSD symptomology.

When evaluating the study by Lu et al. (2009), it should be noted that there are no details on how the participants were diagnosed. For example, the study mentions that PTSD was confirmed in medical records and through individual screening. However, we do not know on what basis the diagnosis of PTSD was given to each participant. Furthermore, we have no idea how long the patient in question has had PTSD. There are a few things others things should be taken into account. Eight out of fifteen participants were taking medication. It is not known exactly what type of medications were being taken or the dosage. As a result, the role in which the medications may or may not have played cannot be evaluated. Another point that should be taken into consideration is that outcome measures were retrospective self-reports.

When evaluating the study by Cook et al. (2010) it should be noted that all participants were male. Also, 78% were receiving concurrent psychotherapy and 93% were receiving treatment from a psychiatrist. As a result, any improvement within the patients could be related to those two factors. Participants who were taking psychotropic drugs were required to be on a stable regimen for at least 3 months prior to treatment. However, once into the trial, patients were allowed to change up regimes as deemed necessary by professionals. Patients were also allowed to receive mental health treatment as needed. Those factors should be included in the evaluation of the results of this study. No immediate post treatment assessment was conducted, and there were no measures of nightmare distress or intensity. Also, there were only two therapists conducting the treatment sessions.

Discussion

Through focusing on the etiology of nightmares and imaginal exposure as treatment, there may be hope in alleviating or at least relieving some general PTSD symptoms. It's important that Belicki and Belicki (1986) took the initiative in examine

predispositions to nightmares. If risk factors can be identified, protective factors can be explored. Their study shows that high vividness is associated to nightmare frequency in the general population. However, it is not known as to whether or not this is the same for those who are suffering from anxiety disorders. The relationship between different diagnoses of anxiety and differences in imagery needs to be explored further. If there is a relationship or pattern between different diagnoses of anxiety and differences in imagery, it might offer ideas as to how different groups of people can be approached in regards to imagery therapy.

So, specific anxiety and trauma disorders need to be evaluated and approached differently with respect to imagery exposure as treatment, because different anxieties affect physiological aspects at different levels (Cook et al, 1988) In the study by Tarrier et al (1999) it was concluded that there are associations between imagery rehearsal and people worsening in frequency and intensity of nightmares. At the same time, the study by Forbes et al (2001)

shows that imagery exposure showed significant improvements in nightmare frequency and intensity. Clearly more research is needed.

Caution must be exercised in treating people with imagery exposure alone. Treatment with imagery exposure alone does seem to be effective and is better than no treatment. But, the comparison should not be that it is better than no treatment at all. The main goal shouldn't be getting individuals to a level of functioning. Instead, the focus should be on getting individuals past what is considered normal functioning. The end goal should be on helping people flourish and becoming great, reaching their full potential. Minnen and Foa (2006) concluded that there was a relationship with between-session habituation and treatment outcome. As a result, future research should investigate the relationship between those who do/not have a decrease in PTSD symptomology and their between session habituation to see if we a link or pattern can be identified to replicate the findings obtained in research by Minnen and Foa (2006).

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